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Rural Lines

SEPTEMBER
1956

Electrification Section

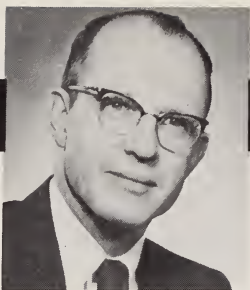
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The tempo of rural life will quicken this month as 38 million young Americans trudge back to classes. For REA electric and telephone borrowers, September brings resumption of many fine projects in cooperation with school heads, teachers, youth leaders and the children.





A Message from the

ADMINISTRATOR

WE ARE at times prone to forget efforts our neighbors make in the various activities of our local community. They need a "pat on the back" when a job is well done. And sometimes a little advice in solving a knotty problem.

It's such a "pat on the back" that I want to give you directors and managers. Had you been willing to sit back to "let George do it" we wouldn't be where we are today in this program.

My first month as administrator has strengthened my faith in the ability of rural folks to provide themselves with modern electric and telephone service. I am confident that this service will continue so long as able and responsible citizens will give of their time and energy to act as directors and managers.

The Congress has provided ample funds so that the staff of REA can assist, but the success or failure of the program depends upon the energy and ability applied at the local level.

David A. Hamill

Administrator.

National Power Use Workshop At Milwaukee in October Will Develop

1957 Power Use Plans

IF YOUR co-op is planning a stepped-up, year-round power use program in 1957, you'll want to take in the third annual National Power Use Workshop of the Inter-Industry Farm Electric Utilization Council at Milwaukee, Wisc., October 14-16.

This year's Workshop program has been drafted for the main purpose of giving rural electric systems proven working tools and methods for the successful promotion of farm use of electric power. Concentrated attention will be given to the 10 items of farm production equipment and nine household appliances included in the 1957 Farm Power Use Promotional Calendar (p. 18, RURAL LINES, August).

REA's new administrator, David A. Hamil, will keynote discussions at the Workshop. Mr. Hamil's talk will open the program Monday morning, setting the tone for the two days of panel discussion which will follow.

Following through on its promise to make the third Workshop the best yet in its series, the Inter-Industry Council has arranged the program so that no one will have to miss out on a single sales-tingling idea or profitable discussion. Only one discussion will be going on at any one time, so that each participant can take in every Workshop session.

The Workshop panel discussions

will feature tested sales promotion plans and techniques developed by state or local inter-industry groups. Representatives of manufacturers, distributors, electrical contractors, agricultural agencies, and local power suppliers will join in telling how they worked together to create more effective power use programs. These reports will include details of specific promotions and suggestions for use in 1957.

One Workshop panel will discuss the best means of using the Council's 1957 Sales Promotion Handbook which will be introduced at Milwaukee. A second panel will discuss why it's good business to have a sales promotion program.

Other discussion panels will take up these subjects:

"How to Budget & Plan a Sales Promotion Program"

"Measuring Results of a Local Power Use Program"

"How to Get Others to Cooperate with Your Program."

Workshop participants will also see many educational exhibits and displays of materials, devices, techniques and publications now being used to advance electric farming. Manufacturers will show heat pumps and newest farmstead lighting installations along with other new equipment.

Workshop sessions will be held in the Kilbourn room of the Milwaukee Auditorium. Hotels within easy walking distance are the Schroeder, Plankinton, Wisconsin, Medford, and Towne.



Nodak made it easy for Plumbarama visitors to get full information on all types of water devices and plumbing equipment. Here Arthur Schultz, extension agricultural engineer (second from right), explains the pitless water system to farmers. Behind Kenneth Sondreal, farm owner (right), is model of insulated pump enclosure.

Rural Families Get Ideas on Costs And Installation Methods in Visiting

Nodak Plumbarama

NODAK Rural Electric Cooperative, of Grand Forks, N. Dak., has staged two highly successful "Plumbaramas" in a new move to stimulate water and sewer system sales among its 8,750 consumer-members.

Some 1,200 co-op members who took in the Plumbaramas at Brocket and Buxton, N. Dak., early in June liked what they saw. Complete sewer, house plumbing and water system installations were featured. A dozen exhibits of water devices and plumbing accessories were displayed by distributors. And coffee and doughnuts were "on the house."

The Plumbarama appealed to members more than some demonstrations because water and sewer installations were left "open" during the day for all to see. It was a

good step too that so many qualified people were on hand to answer questions. And it helped visitors to have equipment prices plainly posted.

Plumbers and distributors told the RURAL LINES representative they felt repaid for the time and money spent on the promotion. One plumber reported making two complete water system sales. Others figured the prospects they obtained would lead to new business.

Manager James F. Coleman says the planning aid that Duane Fossum, farm utilization adviser, gives members, plus demonstrations such as the Plumbarama, speeded up the buying of around 2,000 properly installed water systems the last few years.

Mr. Coleman says assistance of local county agents made the co-op's water system promotion more effective.

He says, "We can't say enough for the good help given us by the Extension Service. They put on a good many demonstrations featuring electric home and barn equipment. They also helped publicize our Plumbaramas and had three men on hand to advise farmers and answer questions."

Planning a Plumbarama takes a good deal of work and foresight. Mr. Fossum puts plenty of both into his power use work.

"We call the plumbers from each area together," he explains. "Each plumber notes the sewer and water equipment he will install at cost to the farmer. The result is that the farmer who plays host to a Plumbarama actually gets a water system and sewage disposal system for a third of the regular price.

"Nodak helps the farmer lay out the system and helps him pick the right equipment for his needs. Our co-op trencher does all digging at cost. Incidentally, our trencher has been a real inducement in interesting farmers to install water systems. But now that plumbers are buying trenchers, we leave most of this type of work to them. Trenchers are a great goodwill builder.

"Our Plumbarama is a team job with plumbers, distributors, extension service and Nodak all doing a share of the work. We say you can't beat getting ideas by seeing. That's why installations are exposed for viewing, a feature made possible by doing the work ahead of time."

Manager Coleman believes the Plumbarama has real promise in water system promotion. Already

there is talk of setting up more of the one-day shows this fall.

"Our farms," he points out, "are largely electrified now. Members use an average of 400 kwh per month. So we're not pressed to add substantially to our load. But we feel the Plumbarama offers a good opportunity to show our members what modern water and sewer systems can do for them.

"We have a tough problem putting in water systems in this area because of the heavy soil conditions. It takes careful planning of systems to avoid mistakes. That's where Duane's free system layouts fit in so well.

"A large number of our farms are owned and operated by our members. Our people spend a good piece of their income improving their farms and homes. But farmers have to be sold on the idea of paying for their water systems while they enjoy them.

"A basic plumbing system costs about \$1,250 and we feel that a long-term, low-interest financial plan has to go along with water system promotion. We finance water systems from general funds, charging 4 percent interest on the unpaid balance.

"Now that so much farm work is mechanized, farmers have more time to use 'do it yourself' techniques. Many members install all or part of their new sewer or water systems with co-op and Extension Service guidance. Booklets and information material from plumbing supply houses make system installations fairly easy.

"Through our Plumbaramas, we aim to get across the idea that water under pressure is the most important improvement that can come to a farm, next to electricity."

An Oklahoma Co-op Plugs Consumer Financing and Finds That

Loans Boost Load

SINCE the Choctaw Electric Cooperative in Hugo, Okla., tied in consumer financing with its power use program three years ago farm consumption has increased from an average 73 kwh during the first half of 1953 to an average 95 kwh monthly for the same period this year. And in that time the average number of farm members jumped by 900.

Jack Gambrell, manager of the distribution co-op serving more than 5,600 members, told the RURAL LINES reporter that REA's Section 5 loans are the key to the co-op's load growth. The loan program is one of several business-building projects pushed by Choctaw, which is taking a leading part in the area's Rural Development Program. (RURAL LINES, Aug.)

What the 20-odd electric appliance dealers in the area think of the consumer loan program was voiced by James Tucker, of Broken Bow, Okla., who said, "You should see how our sales have picked up since the co-op's loan program has made appliance buying easy for the customer."

During the three years Choctaw has made 845 loans totaling \$213,-843, mostly for water systems and electric appliances. Dealer sales totaled 1,050 units. Peak month showed 86 sales for \$23,000.

But it wasn't always thus. Choctaw's Section 5 program got off to a slow start, mainly because it lacked careful planning and pro-

motion. When Mr. Gambrell became manager the program took on a new look and really began to move.

A needed shot-in-the-arm was provided by Vance Womack, the co-op's power use adviser, who began by staging get-togethers of rural people in sections of Choctaw, McCurtain, Pushmataha, La Flore and Atoka counties.

"We aimed to make the meetings lively and interesting," says Mr. Womack. "When word got around that the meetings would be entertaining turnouts were good, averaging around 40 people. All the meetings followed the same pattern. We told them about Section 5 loans and how they could get them. Then we listened to their problems and answered their questions."

"Usually we showed an educational movie about some electric appliance. Sometimes we gave a full scale demonstration of a household appliance or farm chore implement. The meetings ended with a comic film to send the crowd away in a friendly mood. The series of meetings really paid off."

Mr. Womack also called on the electric appliance dealers in the area and sold them on the idea of cooperating with the consumer purchase financing plan.

Choctaw has the program worked out so that it isn't taking any chances. Members buy their electric appliances from dealers and

finance them through the co-op. By agreement with the co-op, the dealers are subject to full recourse on defaulted loans. Further protection for the co-op is provided by a premium added to the charges which insures the buyer's life and protects against damage or loss of the appliance.

How are payments coming in on this "pay as you use" plan?

"We're well satisfied with the way collections have been coming in in this low-income area," Mr. Womack notes. "Our members have so far repaid more than \$93,000 on their appliance loans."

Promotion of the consumer financing plan continues even after three years of operation. Choctaw's newsletter, *Pushbutton News*, plugs the program frequently, and the group meetings with prospective buyers are still going on. During his many house-to-house calls in the area Mr. Womack continually boosts the Section 5 plan and the power use program, talking about new household appliances, barn and shop electrical implements and adequate wiring.

How thoroughly the co-op has sold its member users on the consumer loan program was illustrated when the dealers were asked if they had to tell prospective buyers about the loan plan. In every case the dealer replied, "No, the members tell us about it!"

Purchase of electric ranges is encouraged by the co-op's year-round free installation and by a dealer summer time gimmick in which the seller sends a check for \$36 to the co-op for crediting to the purchaser's electric bill at the rate of \$3 per month.

For the past three years Choctaw has joined with the dealers in a



Mrs. Byron Loy, of Loy's Hardware and Furniture Store, Antlers, Okla., explains the merits of a modern refrigerator to A. B. Huff (center), prospective buyer under Choctaw Co-op's consumer loan program. Vance Womack, power use adviser, stands by to help explain plan.

sales stimulating deal for summer. The co-op offers a year's free electricity to run any new home freezer bought during June, July or August.

All in all, the program has been beneficial for everyone concerned, building the power load for the co-op, stimulating sales for dealers and enabling the members to enjoy more conveniences.

Vance Womack, Choctaw's power use adviser, checks electric range with Mrs. Ray Grant in her home near Hugo, Okla. Mrs. Grant's home, the first to be energized in the Choctaw Co-op, is now fully equipped with many modern electric conveniences for comfortable living.



PIONEER

THE FOLKS around Carthage, Illinois — especially the old-timers in rural electrification—already know what it's like to have a woman president in their midst. Mrs. Ruth Stevenson, a pioneer of the Western Illinois Electric Cooperative, was the first woman in the United States to be elected president of a rural electric system. She held this high office from July 1938 to February 1941. When she resigned from the presidency of the co-op, she was promptly elected vice-president and served in that capacity for the next nine years.

The Stevenson farm (just north of Elvaston, Illinois) is an outstanding example of modern electric living. One of the earliest of the Stevensons' electric installations was a pressure water system, which helped to relieve much of the drudgery of both barn labor and housework. They have electric pig and chick brooders working for them, as well as a cream separator, air compressor, water heater, stock waterer and an electric elevator. And the menfolk cherish a special devotion to their summertime helper, the electric lawnmower.

In the house, Mrs. Stevenson for years has been acquiring all the electric conveniences you'll find in any modern city home. She has practically every appliance from an electric alarm clock to a 13-foot food freezer. And to round out



Mrs. Ruth Stevenson

their comfortable living, the Stevensons are now considering electric house heating.

During her 12 years as president and vice-president, Mrs. Stevenson has done much to help build Western Illinois Electric Cooperative into a successful business organization. It now serves hundreds of farmsteads and has had a vital role in the economic expansion of the whole area.

Mrs. Stevenson also is a leader in her community, as president of the Prairie Unit of the Home Bureau, chairman of the Women's Committee of Hancock County Farm Bureau, and an active worker in the Presbyterian Church of Elvaston. Ruth Stevenson is a woman who started her community service at the top and seems to have stayed right there.

RURAL LINES invites nominations of persons for recognition as pioneers of rural electrification. Send details with photographs to Rural Electrification Administration, U. S. Dept. of Agriculture, Washington 25, D. C.

This Kansas Co-op Sells More Power, In Poor Crop Years, With Streamlined Rates

DESPITE poor crop years farmers will use more electricity if the service and rates are made attractive, Manager W. A. Dobson of Wheatland Electric Cooperative, Scott City, Kans., has discovered.

The Kansas distribution borrower serves seven counties in Kansas, as well as Cheyenne and Kiowa counties in Colorado. It had 42 separate rate schedules up to a year ago. Rates for its 4,654 customers varied from town to town and, in some cases, even for the same class of service. Wheatland generates its own power in four plants with a total capacity of 13,755 kilowatts.

"Last year we studied our rates with an eye to standardizing them and encouraging our customers to use more electricity," Gordon Tempero, Wheatland's general engineer, told the RURAL LINES reporter.

"By consolidation and elimination we cut the number of rate schedules to 25 and lowered the rates to all our town customers. It seems pretty sure that the lower rates will bring in more revenue, because during the first six months of this year we sold about two million more kwh than in the same period of 1955. That represents around \$17,000 in added revenue."

Eventually the co-op hopes to get along with 11 or so rate schedules. Meanwhile, the farmer consumers

are buying household electric appliances at a good pace and Mr. Tempero expects more activity in the appliance line when Wheatland completes its rate revision and gets into its home and farmstead lighting campaign under the Willie Wiredhand dealer program.

A series of "adequate wiring" meetings conducted some years back by Wheatland for consumers paved the way for consumption gains under the new rates.

"We started the meetings soon after the co-op was energized," Mr. Tempero says, "These provided wiring instructions for both farmers and electricians. Our goal was to show consumers what they had



Shown here on their assignment of streamlining Wheatland Co-op's rate structure are Gordon Tempero, general engineer, and Wm. Gies, office manager.

to do to get top service and derive most benefits from electricity. The meetings really paid off, and we say they helped speed up our power use growth."

In company with many western cooperatives Wheatland faces the problem of bettering a poor annual load factor by developing new loads to balance the summer irrigation peaks. Last summer the average of 158 irrigation wells served by Wheatland used more than 4.5 million kwh, amounting to \$96,897 or one-seventh of the total revenue.

Wheatland is looking to panel heating and winter irrigation as means to balance summer peaks.

"We know that panel heating will be a big help," Mr. Tempero explains, "and we think winter irrigation has good possibilities for us too. Out here, you know, soil types make it possible to store up two inches of moisture per foot of top-

soil, while the normal root zone of most growing plants is up to six feet. So we're going to see what we can do to get our people to try winter irrigating.

"First, though, we will revise our rates, so that high rate blocks will apply during the normal irrigation season and low blocks in winter."

Despite prolonged dry spells in the area, consumption figures quoted by Mr. Tempero indicate the upward trend electric usage has taken in the nine counties. In 1952 average consumption was 165 kwh; last year it was near 250 kwh monthly. In 1952 Wheatland sold less than 19 million kwh; last year the figure was nearly 26 million.

All of which offers pretty good proof that when the service and rates are right even a few off crop seasons won't deter the farmer in his determination to live and farm better electrically.

Borrowers Step Up Advance Payments

REA electric borrowers had repaid nearly \$100 million ahead of schedule by June 30 this year and the number of systems in arrears was at an all-time low.

In the telephone program both the dollar delinquency total and the amount of payments ahead of schedule have increased, with a minor downward change in the number of borrowers in arrears.

As of the June 30th end of the fiscal year, 772 of REA's 996 active electric borrowers had increased their advance payments by \$11 million to a total of \$95.9 million. Ten were delinquent more than 30 days, in an aggregate of \$332,364.

During the fiscal year the electric systems repaid about \$80 million of principal against loan advances

which at the start of the year amounted to \$2,583 million, and in addition paid \$36.8 million in interest.

At the close of the year 374 telephone system borrowers had received advances of loan funds totaling \$153.8 million, and 28 of these were more than 30 days overdue in payments aggregating \$553,623. A year ago 29 borrowers were delinquent a total of \$512,266. Currently 19 telephone borrowers are \$186,294 ahead of schedule in their payments; a year ago seven were \$13,757 ahead.

During the year telephone borrowers repaid approximately \$1.2 million on principal, plus interest payments of \$929,000.

SAFETY



No Let-Up on Safety Principles

RECONSTRUCTION of a recent fatal accident to the maintenance superintendent of a Minnesota distribution co-op points up the danger of even momentary deviation from standard safety rules.

Known facts of the incident are that the man, working alone in a mobile unit and contacted by two-way radio, offered to proceed to the location of a nearby switch and to open it when ordered. The switch was being fed from both directions and not being opened under load. He reported via radio that he was at the location, and a moment after receiving the order stated he was having trouble opening the switch.

Later his body was found near the switch pole, his rubber gloves lying beside the radio mike on the truck seat. Examination revealed that five of the nine caps holding the switch blades were snapped off, one cap falling on the switch base and crossbars.

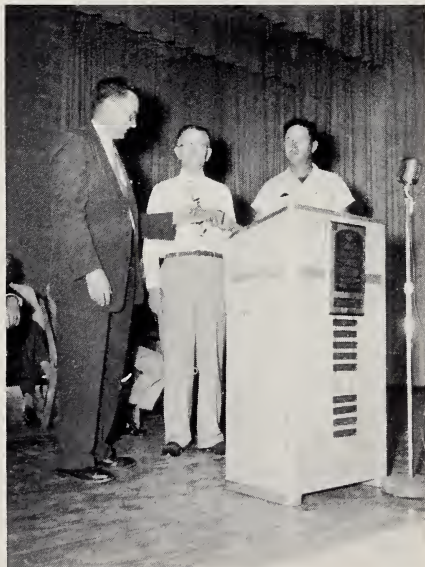
It is believed the man donned his rubber gloves before first touching the switch and that he removed them to operate the mike to report difficulty opening it. Then, it is assumed, he turned to operate the switch barehanded and by a vigorous pull snapped off the caps so that the operating rod and handle were energized, fatal shock resulting.

Texas Borrower Earns 500,000 Hour Award

Safety has become a way of living and working for employees of the Navarro County Electric Co-operative, Inc., Corsicana, Texas.

As evidence of this, the co-op has recorded its 500,000th consecutive man-hour of work without a lost-time accident among its 19 employees. The no-accident string stretches back to 1946.

The photograph shows Karl Langhorst, insurance representative (left), presenting the bronze 500,000 hour award plaque and the tenth 50,000-hour plaque to Manager Osie Cauble (right), as Superintendent Hugh Parrish, Jr., beams pride in the accomplishment of his men. Presentation was made at the Navarro Co-op's 18th annual meeting.



Stepped-up load-building activity in 1956 has brought a bumper crop of power use ideas across the country. RURAL LINES here presents a gleaning of new promotions, success stories, and other load building developments.

The dates of Sept. 7 and 8 have been set for the 1956 Wire-rama of the **Northwest Iowa Power Cooperative** and ten member distribution co-ops. The name is somewhat deceptive, as the promotion goes far beyond a rewiring demonstration. Purpose is to show tremendous advantages of modern electrical power applications on the farm to the farmer who seeks to cut operating costs and increase farm efficiency. The 1956 Wire-rama will be held on the farm of Mr. and Mrs. Lowell Parks near Remsen, Iowa (35 miles northeast of Sioux City). In his large Grade A dairy operation, Mr. Parks has electric-powered barn cleaner, water heater, base heater, milking machine, milk cooler, cream separator, and stock feeders. Mrs. Parks uses electric-powered equipment in her sizable poultry plant for feeding and for candling, grading and washing eggs. In their new farm home the Parks will use electricity for heating, cooling, food freezing, cooking, laundry, and other household services.

The **Rosebud Electric Cooperative**, Gregory, S. Dak., offers members free use of a 1-h.p. electric hammermill for a three-day trial of this labor-saving economical feed grinding method. When a farmer is interested, the Co-op and the member invite his neigh-

bors to attend the initial demonstration at his farm. Usually the neighbors arrange for trial use of the hammermill on their own farms.

More than \$1,000 in prizes of water pumps, water heaters, and even a drilled well were given to members of the **Pickwick Electric Cooperative**, Selmar, Tenn., as incentives for returning a survey card on farm water supply. Water pump distributors and their dealers, the county health department, Extension Service, Farmers Home Administration, are working with the co-op to promote sanitary water supply in rural areas.

"Coal Man Swears by Electric Heat" appeared in the June issue of *Indiana Rural News* over a story of the economy and satisfaction his new electrically-heated home gives coal mine operator Sylvester Harpeneau, member of the **Southern Indiana REC**, Tell City. Cost of heating the home for eight months of the 1955-56 season was \$80, plus \$20 for coal used in a basement fireplace. Proper insulation is the biggest factor in holding the cost down, Mr. Harpeneau states.

More and more members are coming in with electrical problems as their power loads grow, reports

POWER EXCHANGE



R USE ANGE



Manager Everett S. Hoy of the **Butler Rural Electric Cooperative**, Hamilton, Ohio. About 31 percent of members are using over 500 kwh per month and 6 percent over 1000 kwh. To help members who have load problems or plan new major uses, the co-op offers a visit by Ted Johnson, an electrician and former electrical contractor.

The Hancock-Wood Electric Cooperative, North Baltimore, Ohio, has had excellent response to its offer of street lighting installations for rural members. These lights provide rural residents with protection against trespassers as well as cheery light for roadsides. With a recent newsletter, the co-op enclosed a business reply card on which members could request free layout service and cost estimates on lightning controls, street lighting, hay drying fans, grain drying, air conditioning, and electric room heating.

Electric power provided by the **Y-W Electric Association** at Akron, Colo., has replaced a fuel used for irrigation pumping on the 4,000-acre ranch of Ernest Wiley and Sons, near Hale. The Wileys use five pumps to irrigate about 200 acres of crops, mostly alfalfa and sorghums. The Y-W co-op has added a number of elec-

tric pumps, ranging up to 100 h.p., to its lines this spring.

Buena Vista County Rural Electric Cooperative, Storm Lake, Iowa, offered 50 kwh of electricity for four months to members purchasing their first air conditioners during the summer of 1956. Another borrower, the **McDonough Power Cooperative**, Macomb, Ill., discontinued its offer of free installation for air conditioners because of high costs in older buildings and the seasonal nature of the load.

When member Joseph P. Kane telephoned to request a larger transformer his need spurred **Maquoketa Valley Rural Electric Cooperative** of Anamosa, Iowa, to give the order highest priority. The reason: A double order of triplets in the Kane household. Besides two boys and a girl, the Kanes had become proud owners of a large new water heater, automatic washer and clothes dryer. Mother and babies are doing well, and the electric servants are busy, no doubt. The Kanes have five other children.

The *Co-op News* of the **Duck River EMC**, Shelbyville, Tenn., uses effective power use stories based on members' actual experiences with their electric helpers. Each story carries a quotation on the member's satisfaction with the appliance and a first-hand account of how it is used to lighten work or add to family comfort. The story concludes with a discussion of the chief points to be considered in buying, installing or operating the particular appliance. Clear photographs add to the effectiveness of the articles.

Homogeneous Reactors

Simplicity, Safety Recommend This Type To Wolverine Electric Cooperative

MUCH of the interest in nuclear reactors for production of electric power has centered around the heterogeneous design in which the fuel and moderator retain separate form. That is the type adopted by the Rural Cooperative Power Association, Elk River, Minn., for its atomic generating proposal.

Another reactor type which offers considerable promise to rural power systems is the homogeneous type in which fuel, coolant and moderator are mixed. This is the design chosen by the Wolverine Electric Cooperative, Hershey, Mich., for its proposal under the second round power demonstration program of the Atomic Energy Commission.

Homogeneous reactors, like other nuclear reactors, have their good points and some disadvantages. Chief advantages are their fundamental simplicity and assured nuclear safety. There are no fuel elements to replace and control rods are not needed.

A homogeneous reactor in its simplest form consists only of a spherical tank of the proper size filled with a uranium solution or slurry. The size of the tank depends on the amount of U-235 used for enrichment as well as the fluid (water, heavy water, etc.) used in the solution.

Additional equipment is needed, of course, to harness the energy

output of the reactor for useful work and to keep the reaction going.

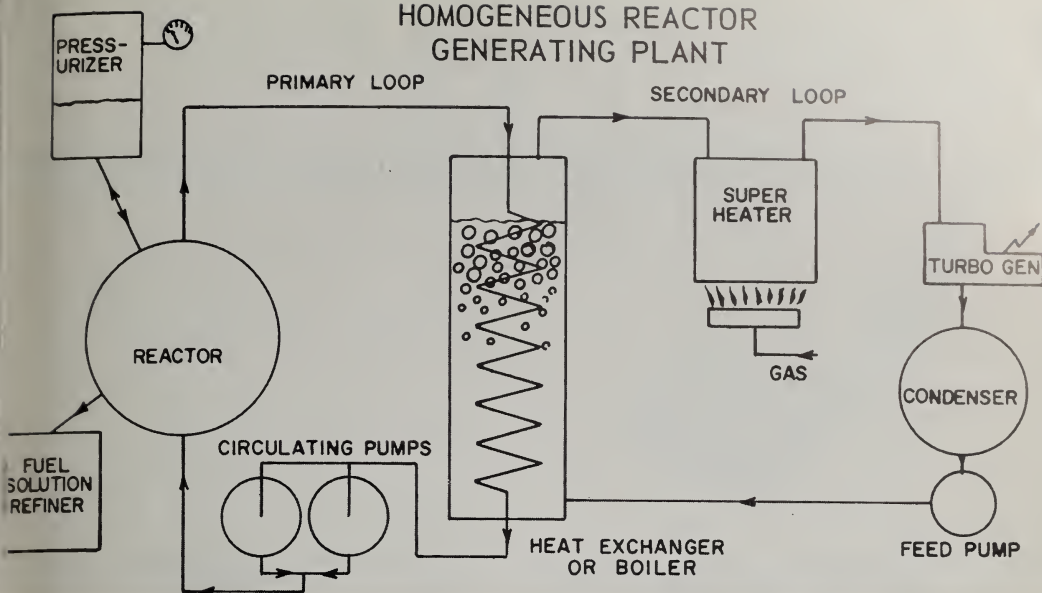
When the nuclear reaction takes place in the spherical tank it heats up the reactor solution. To make this heat available for useful purposes the solution is piped to a heat exchanger or boiler where it gives up its heat to plain water, forming steam. The reactor solution is then pumped to the spherical tank, where the nuclear reaction heats it again and the cycle is repeated. This is the working (or primary) loop.

The fission products produced by the reaction must be removed or they would eventually stop the nuclear reaction. This is done by drawing off a small portion of the reactor solution and by various means removing fission and corrosion products which interfere with the nuclear reaction. New reactor fuel solution is also added as needed.

Pumps are needed to circulate the reactor fluid through the reactor sphere and the heat exchanger. The pumps usually chosen are the famous canned motor pumps. These are completely sealed, both pump and motor, and are cooled by the fluid they pump.

Still one more important auxiliary must be added to make a workable reactor. That is a pressurizer to keep the reactor solution from boiling. The pressurizer is nothing

HOMOGENEOUS REACTOR GENERATING PLANT



more than a tank filled with steam or gas to the required level and pressure.

Homogeneous reactors also have excellent nuclear safety characteristics. This results from a high negative temperature coefficient which is inherent in the design. The importance of negative temperature coefficient was discussed in a previous article of this series (RURAL LINES, April).

With the major advantages of safety and simplicity, why aren't all reactors the homogeneous type?

Unfortunately, these advantages have to be paid for with other problems. The chief problems are the extreme corrosiveness of the nuclear solution and the radioactivity created in all parts of the primary circuit. Another problem arises from the complicated chemical solution which develops as the reactor is operated.

An indication of the highly corrosive nature of the reactor solution occurred in the first operation

of the homogeneous reactor experiment at Los Alamos. In the assembly of the reactor a gold-clad stainless steel heat exchanger tube was scratched. This was not known until after a few hours of operation when the tube developed a strong leak spilling reactor fluid into the steam side of the heat exchanger. The cause of the failure was not discovered until the reactor was shut down and examined.

The proposed Wolverine reactor in its essential features is the same as we have discussed here. It will also have a superheater added to bring the steam for the turbine up to the pressure and temperature condition normally used in modern steam plants. The sketch shows the basic elements of this type of reactor system.

Homogeneous reactors, along with many other types, hold high promise of economical power. Their potential will be more evident when we have had more experience with actual working installations.

More Power for Nebraska Farmers

THE growing electric power demands of 27 REA-financed rural distribution systems in eastern Nebraska will be met through two REA loans totaling \$26 million.

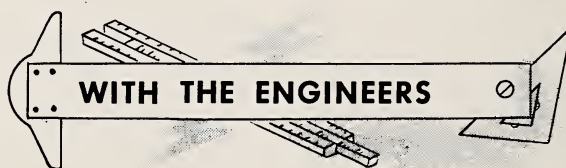
The larger loan, for \$17 million, will finance the construction of a 100,000 kilowatt single unit steam electric generating station near Lexington, Nebr., by the Central Nebraska Public Power and Irrigation District of Hastings. Completion is planned by July, 1958.

The other loan, for \$9 million, was made to the Loup River Power District of Columbus, part of the Nebraska Public Power System, for additions and improvements in the N.P.P.S. transmission system.

The 27 rural distribution systems

buy their wholesale power from N.P.P.S. Under terms of previous loans the rurals were guaranteed 101,000 kw, but in 1955 the load was 122,000 kw and is expected to more than double that by 1965.

The new loan agreements stipulate that the rurals will be assured a power supply of 201,000 kw, which includes the output of the new plants plus the 101,000 kw previously committed to them. In addition to annual interest credits to be passed on to the REA borrowers, it is estimated that this generation and transmission program will enable them to purchase power at an average rate of 8.5 mills per kilowatt-hour as compared to the present average of 9 mills per kwh.



Insulating oil in use should have high dielectric strength and low acidity.

• • • • •

Adequate maintenance of oil circuit reclosers is a must for safety and good service.

• • • • •

The use of a reduced size neutral on secondaries and services is not recommended because it aggravates voltage problems.

• • • • •

Lightning is the largest single cause of rural transformer failures.

• • • • •

Vibration of conductors is related to sag, wind velocity, conductor diameter and weight.

• • • • •

Fire insurance claims may be disallowed because of unauthorized heat ducts or other opening in a vault.

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"In God We Trust" is engraved on pennies for those who insist on using them for fuses.

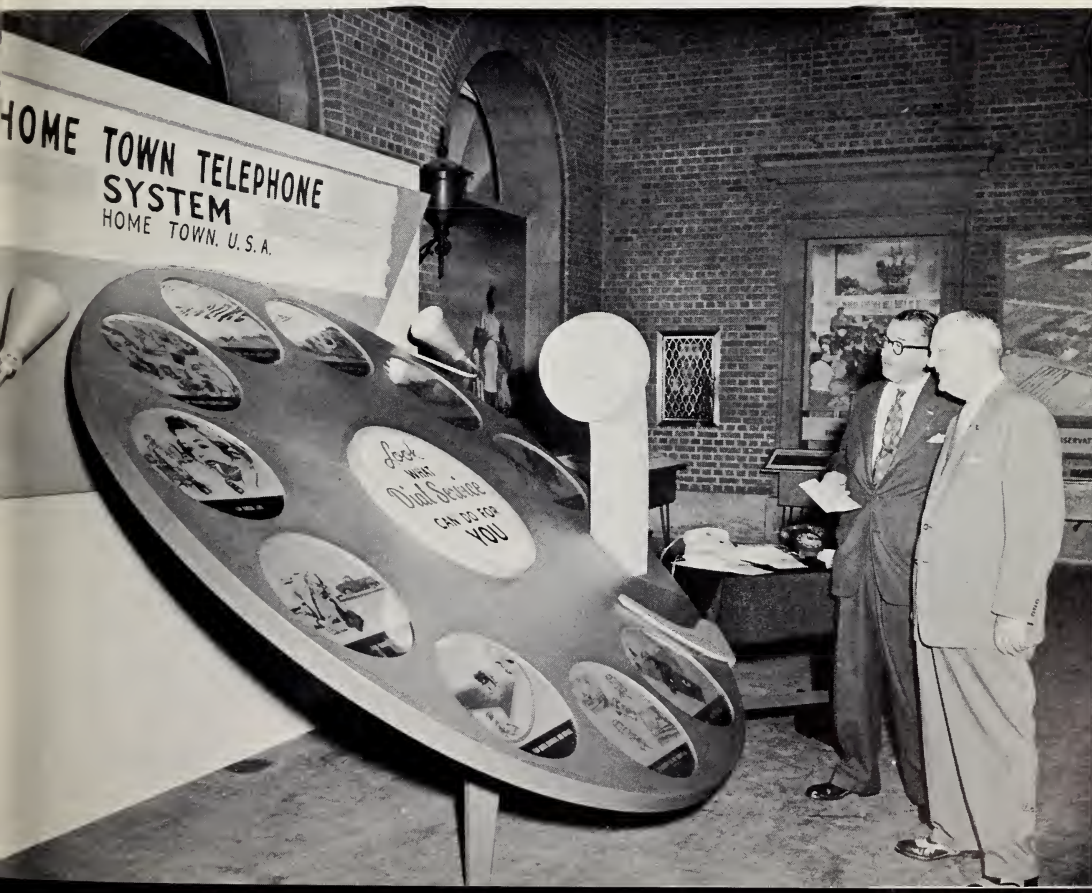
Rural Lines

Telephone Section

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Exhibit designed by REA (photo below) will be used by REA borrowers in several midwest states this fall to tell potential subscribers about the value of modern rural telephone service. Viewing exhibit at Washington preview are J. K. O'Shaughnessy, REA Assistant Administrator (right), and Ralph Hyle, Pine Grove, Pennsylvania.



Minnesota Telephone Co-op Sees Golden Age Ahead As It Passes Milestone

Fifty Years Young

VOICE of the Valley, chatty publication of Garden Valley Telephone Company, featured its biggest progress story this summer—50 years of service and cut-over of the last of 21 dial exchanges.

The golden anniversary of the pioneer telephone cooperative, headquartered in Erskine, Minn., gave its 6,275 subscribers plenty of reason to celebrate. For the current issue marks the completion of a series of progressive steps by management and directors to provide top service in its eight-county area in northwestern Minnesota.

Few are the subscribers still

around who recall the chain of developments which have highlighted the growth of the cooperative over the years. But newcomers and many oldsters know all about Garden Valley's swing to dial communication. For, as they will tell you, the co-op is almost as much a part of their lives as their high-producing dairies and good potato and corn crops.

Garden Valley started as a mutual with a handful of subscribers back in March 1906. The new system had its share of ups and downs during a period which carried through two world wars and lean and fat times. In 1948 it reorganized as a cooperative.

Fifty years ago the organizers of Garden Valley, Jans O. Rindahl, Herman Loitten, James O. Hovland, Gilbert A. Bratland, Lars Wik, Martin G. Peterson and Enick G. O. Hoglund, adopted a policy of giving good, low-cost telephone service to its subscribers. This policy, carried out over the years, has won the company distinction as a well developed system and one of the largest cooperatively owned telephone companies in the country.

Let's turn back the clock 50 years to when the infant organization was getting a foothold. In those days the board members expected farmers along the route where lines were being built to board telephone field crews. Farm-



Manager Carl M. Ostby and Ruth Espe-soth, assistant office manager, plan the Golden Anniversary issue of the company paper, "Voice of the Valley."



Bert Brown checks distribution rack of the new Erskine, Minn., dial exchange.

ers who refused might not have their lines built.

Pole hauling cost 1¢ per mile per pole. Thus you could haul a pole 10 miles for 10¢. Some 20 years later, the company got an estimate of \$4 to move two poles 31½ miles.

In those pioneer days poles were bought unpeeled. It cost the company 15¢ to peel and set a 20-ft. pole to a depth of 3 to 3½ feet. In building crossarm lines the cost for peeling, gaining, attaching cross-arms and setting one pole totaled 30¢. The 20-ft. poles cost 50¢.

Garden Valley has come a long way since it received the first of two REA telephone loans totaling \$4 million. The first exchange was cut over to dial early in 1953 and most of the system has been rebuilt.

Carl M. Ostby, company manager, points out that conversion to dial saved \$65,000 in payroll expense, enough to carry more than \$1½ million of the REA loan.

Figures show how well the company has progressed the last 10 years. Today's telephone listings number 6,245, a gain of 1,132 over 1945. In the same period, telephone rentals increased from \$73,574 to \$238,840. Toll revenue is \$61,135, more than double the mark ten years ago.

Says Mr. Ostby, "Our board felt that a special Golden Anniversary issue of *Voice of the Valley* was the the best way to commemorate our 50 years of service. It's a milestone that so many of our subscribers have helped us to reach. It's a story too of a new age in telephone communication and the bowing out of old telephone habits and equipment. A new golden age is upon us which promises much more in the future than the happenings during the life span of our company."



Manager Ostby (left) checks on cable laying. Carl Nelson is shown in foreground and Art Voight mans the tractor.

REA To Test Radio-Telephone Dial Service

RADIO telephones to bring direct and speedy dial service to isolated areas are the aim of a development and testing project undertaken by REA recently.

REA has ordered experimental equipment from two manufacturers for delivery in about six months. Each contract calls for a dial-operated small fixed station operating on 110 volts, an automatic base station and two dial-operated mobile units of 30 watts and 60 watts respectively. The equipment will be installed on REA-financed telephone systems and tested by REA engineers for costs and quality of service.

Radio telephones currently in use by mobile subscribers in some rural areas require voice commu-

nication with an operator to make a connection. Direct connection into dial telephone switching equipment would require a change in the Federal Communication Commission's regulations on the logging of calls. This has already been requested in anticipation of the new development.

REA foresees many uses for the new equipment in rural areas. These include telephone service to isolated ranches and farm homes where wire lines are costly and impractical; mobile subscriber service for farm, commercial or industrial use in automobiles, trucks, and boats, and radio-telephone communication between the telephone office and its own mobile units for maintenance and operation.

Telephone Meetings

Here is the first schedule of fall meetings of interest to REA borrowers:

ARKANSAS—Arkansas Telephone Association, Hot Springs, Ark.	Sept. 17-18
ILLINOIS—United States Independent Telephone Association, Chicago, Ill.	Oct. 15-17
MICHIGAN—Michigan Independent Telephone Association, Grand Rapids, Mich.	Sept. 6-7
MINNESOTA—Minnesota Telephone Assn., Inc. (Telephone Industry Fall Conference) Minneapolis, Minn.	Sept. 27-28
MISSOURI—Missouri Borrowers, Columbia, Mo. Bookkeeping Meeting	Sept. 10-12
Management Conference	Sept. 12-13
NORTH CAROLINA—North Carolina Telephone Association, Pinehurst, N. Car.	Oct. 4-5
SOUTH DAKOTA—South Dakota Telephone Borrowers Workshop, Mitchell, S. Dak.	Sept. 11-13
TENNESSEE—Tennessee Telephone Association, Nashville, Tenn.	Sept. 13-14
UTAH—Western Rocky Mountain Telephone Association, Salt Lake City, Utah	Sept. 20-21

Backroad Calls

BRING IN EQUITY



SOME may say that house-to-house calling is the "hard way" to sell stock and raise needed equity, but it worked for North Central Washington Rural Telephone Exchange of Tonasket, Wash., last year.

North Central used no general promotion in fulfilling equity requirements. Its manager, A. L. Kronschnabel, and directors along with some enthusiastic backing from Arthur Lund, president of Tonasket's "First National," simply did a top job of personal selling.

It took a lot of driving over backwoods roads through valley and mountainous areas to contact many rural residents. Mr. Kronschnabel, for example, aimed to clinch a sale on the first call. A call-back generally meant another long trip.

Were home calls the best way? Well, Mr. Kronschnabel thinks some promotion such as direct mail, radio spots and perhaps "pieces" in the papers might have "broken the ice" a bit. But, as he says, there wasn't much time for heavy promotion and funds were limited. And after all the ballyhoo, you have to go out and talk with rural people anyway.

Mr. Kronschnabel and North Central's board accounted for a good share of the equity sales. Banker Lund gave a big assist by personally carrying on a stock-selling campaign from his office in Tonasket. He boosted the proposed new dial system to rural depositors and made many sales over the counter.

Mr. Kronschnabel explains North Central's stock raising operation in this way: "No doubt about it, some promotion would have helped us. But we do feel that we gained a good deal by meeting our subscribers, making friends with them and giving them the facts about our new dial service plans. We believe we built up a lot of good will that way.

"We raised \$59,000 in common and preferred stock, the amount required to obtain an REA loan of \$1,022,000. Most of our stock sales were in small sums which prolonged our sales job."

Construction work on North Central's five exchange dial systems got under way in June. Most of the 1,400 subscribers to be cut over next year are cattlemen, apple-growers or timber workers.

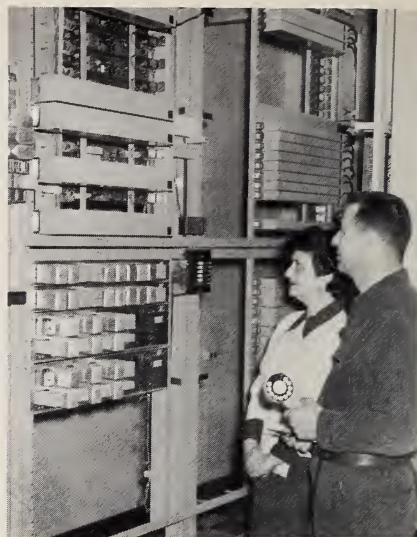
REA Telephone Loan Helps Couple Realize Goal

WHEN the Farragut Telephone Company of Farragut, Iowa, cut over its new dial system last spring, it marked the realization of a long-held goal of the owners, Mr. and Mrs. Ray Sells, to provide modern service to farmers and townspeople.

Ever since Mr. Sells, president-manager, and Mrs. Sells, secretary-treasurer, bought the little magneto system several years ago, they have worked to improve service in this fertile section of the Missouri River Valley. And, like rural residents on other REA-financed telephone systems, Farragut's 373 subscribers can now handle their business and social calls with far greater dispatch.

The Sells replaced their old system with automatic dial equipment, built a modern central office exchange and office quarters and completely rebuilt the outside plant with \$134,000 in REA loan funds.

Subscribers can be proud of their new system today. Changing over



Mr. and Mrs. Ray Sells, owners of Farragut Telephone Co., look over a bay of their modern central office equipment.

to dial called for rebuilding 44.3 miles of old line, construction of 7 miles of new line and continued use of 16 miles. Some 6 miles of line were retired. The Sells are now operating in their new downtown office, a big improvement over conditions when their home housed the central office.

The company's original service area has been expanded to take in areas adjacent to Farragut. About 29 new subscribers have been added. Of the 373 dial subscribers, some 190 are farm families.

Toll and operator calls are handled through the Shenandoah office of Northwestern Bell Telephone Company.

A small sliver of silicon—worth from five to ten cents—makes up the heart of such new electronic devices as transistors, diodes and rectifiers. The material, developed for wartime radar, is expected to be widely used in telephone switchboards as well as in radios, television sets and electronic business computers. Silicon solar-cell "batteries" have recently been developed to convert the direct rays of the sun to electrical power. High purity silicon sells at \$350 a pound.

A Land-Going Scow Helps This Illinois Telephone Cooperative

Cut Clearing Costs

CLEARING right-of-way for construction, long a bugaboo to rural telephone systems, has been converted into a valuable public and customer relations tool by the Wabash Telephone Cooperative of Louisville, Ill.

And best of all, reports Manager Vaughn Brown, they got the pesky job done along approximately 85 miles of rural roads at a saving of 23.7 percent over the estimated costs, or more than \$6,700.

The big money-saving device is an armor steel brush-burning boat hauled along the road by a tractor and bringing the fire to the cut brush, thus eliminating the time-consuming process of carrying brush to many fires along the way.

The brush boat, modeled after the mud boats long used for hauling heavy equipment over muddy oil fields, is approximately 8 by 18 feet and made of $\frac{5}{16}$ -in. steel plate. An upward sweep front and back keeps the burning brush on the boat and permits easy hauling along the roadway. A 4-in. pipe is welded across the front end. The half-ton boat, purchased second-hand for \$75, is hauled to the site

of work on a two-wheeled trailer.

A large portion of the brush clearing labor was performed by members of the cooperative, with approximately 200 working out their membership and equity fee in this way. Members who actually worked on the co-op's operations and saw the problems involved in bringing telephone service to their area feel closer to the co-op.

County and township road commissioners, faced with the problem of keeping their road right-of-way cleared, were glad to cooperate by contributing the use of trucks or tractors to haul the boat. Mr. Brown estimates that this saved the co-op more than \$1,000 and he states that the company and the roads officials have reached a better understanding of each other's problems through this cooperative effort.

On the job it was found that six or eight people clearing brush kept three men busy loading the cut brush on the fire moving along on the boat. Since the fire moved with the job, the need for checking back to various burning sites was eliminated.

Shown here is Wabash Telephone Co-op's brush burning boat on the trailer used to haul it to and from clearing jobs.

The brush boat in action. The tractor hauls the boat loaded with burning brush, keeping pace with cutting crew.



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Electrification

\$2,000,000 Coos-Curry Elec. Co-op,
Coquille, Oreg.
605,000 T.I.P. Rural Elec. Co-op,
Brooklyn, Iowa
470,000 Raft River Rural Elec.
Co-op, Malta, Idaho
128,000 Denny's River Elec. Co-op,
Calais, Maine
* 50,000 Deaf Smith County Electric
Co-op, Hereford, Texas
595,000 Sumner-Cowley Elec. Co-op,
Wellington, Kans.
425,000 LaCreek Elec. Assn.,
Martin, S. Dak.
1,000,000 Sho-Me Power Corp.,
Marshfield, Mo.
750,000 Surry-Yadkin EMC,
Dobson, N. Car.
1,065,000 Fort Loudon Elec. Co-op,
Madisonville, Tenn.
430,000 Lower Colorado River Elec.
Co-op, San Marcos, Texas
506,000 Central Valley Elec. Co-op,
Artesia, New Mex.
1,660,000 Clearwater Power Company,
Lewiston, Idaho
544,000 Matanuska Elec. Assn.,
Palmer, Alaska
* 50,000 Anza Elec. Co-op,
Anza, Calif.
300,000 Coweta-Fayette EMC,
Newnan, Ga.
* 50,000 Vermont Elec. Co-op,
Johnson, Vt.
1,225,000 Clay Elec. Co-op,
Keystone Heights, Fla.
382,000 Egyptian Elec. Co-op Assn.,
Steeleville, Ill.
336,000 Western Illinois Elec.
Co-op, Carthage, Ill.

250,000 Edgar Elec. Co-op, Assn.,
Paris, Ill.
260,000 Lamar EMC,
Barnesville, Ga.
320,000 Upson County EMC,
Thomaston, Ga.
1,125,000 Santee Elec. Co-op,
Kingstree, S. Car.
408,000 Marshall County Rural Elec.
Co-op, Marshalltown, Iowa

Telephone

\$ 560,000 Gray-Haddock Telephone
Co., Gray, Ga.
250,000 Eastern Telephone Co.,
West Enfield, Maine
110,000 Triangle Telephone Assn.,
Havre, Mont.
30,000 Range Telephone Co-op,
Forsyth, Mont.
252,000 Farmers Tel. Company,
Essex, Iowa
213,000 Dodge County Tel. Co.,
Reeseville, Wis.
170,000 Grand Telephone Co.,
Jay, Okla.
557,000 Blue Mountain Tel. Co.,
Spray, Oreg.
550,000 Ruidoso Telephone Co.,
Ruidoso, N. Mex.
253,000 Greenwood Telephone Co.,
Greenwood, Wis.
160,000 Turtle Lake Tel. Co.,
Turtle Lake, Wis.
131,000 Pioneer Telephone Co-op,
Philomath, Oreg.
300,000 Hartington Tel. Co.
Hartington, Nebr.

* Includes Section 5 funds.